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Introduction

The trend toward healthy commercial buildings is nothing new. Even prior to the pandemic, the focus on occupant health as a natural extension of the sustainable design movement was in full swing, as evidenced by the adoption of building certification systems like WELL and Fitwel.

"Recent years have made the case for this movement clear: clean spaces go hand-in-hand with occupant wellness, satisfaction and productivity, ultimately driving value for property owners and managers, and their service partners," according to Ecolab, a global leader in water, hygiene and infection prevention solutions and services.

Nowhere is this more important than in healthcare environments, in which both medical professionals and patients stand to benefit or suffer from the ways in which the building was designed to either support or neglect human health. That's why we've assembled this eHandbook on the importance of designing spaces that take into account the myriad of ways a building can support health and wellness, from specifying the right materials for the rigorous cleaning demands of healthcare facilities to re-evaluating products and materials, and to the importance of implementing touchless technologies throughout a building.

We've drawn on insights from experts interviewed in articles from BUILDINGS, i+s and Architectural Products magazines to bring this digital resource to life, as well as a roundup of products that can help support your health and wellness goals. We hope the content in these pages will serve to guide you in your decision making and provide greater value to your design projects and CRE portfolio.

AnnMarie Martin, Editor in Chief, i+s

Janelle Penny, Editor in Chief, BUILDINGS

Jeanie Fitzgerald, Editor in Chief, Architectural Products

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How to Specify Cleanable Surfaces for Healthcare

Specifying for healthcare requires understanding the challenges of cleaning durable coated fabrics, as well as other furnishings and surface materials.

By Barbara Dellinger, Shari Solomon and Teri Lura Bennett

For too many years the design profession has been confronted with seemingly insurmountable challenges—an increase in superbugs resistant to cleaning products, deselection lists, environmentally friendly products provided by healthcare surface material manufacturers without a thorough understanding of the complexities of cleaning in the healthcare environment, and now we have to consider the enhanced cleaning required to address novel coronaviruses, all of which have resulted in many products disintegrating at warp speed.

Coated upholstery fabrics which previously could last for years are failing in a matter of months, usually because cleaning products are not being wiped off with clear water, as stated in the manufacturer's cleaning requirements. This often results in the entire furniture item needing to be reupholstered or put in the dumpster. Previous expectations of furniture lasting 10 or more years have been lowered to five to seven years, with many pieces failing in less than six months.



These failures include:

- <u>Coated upholstery materials</u>: splitting, cracking, crocking, peeling, puddling, fraying, fading, staining and delaminating, and becoming sticky/gummy
- Flooring: yellowing, peeling, becoming sticky/gummy, splitting, bubbling, puckering
- **Wood:** protective coatings when removed leave the finish sticky and gummy, and the stain color disintegrates, leaving exposed raw, open pore wood

With the onset of COVID-19 and new cleaning products and protocols, many of the issues formerly found primarily in healthcare and hospitals are now being seen in retail stores, schools and universities, hotels, and nursing homes. It is not uncommon for workstation chairs to be used 24/7 by three shifts of workers, each person cleaning their chair with a combination of hospital grade wipes, their own bleach wipes and/or other products that cause premature degradations and complete failures. This is an unsustainable operating paradigm, so what can we do?





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Before we can understand why these materials are failing, we must first understand how cleaning and disinfection is typically performed in the real world.

CLEANING VS. SANITIZING VS. DISINFECTING

Cleaning and sanitizing/disinfection is a two-step process. A surface must first be physically cleaned, typically with soap and water or detergent solution, to remove the dirt from the surface. A surface that has not been cleaned effectively cannot be properly disinfected or sanitized. Once cleaned, the disinfectant is then applied to kill the germs on surfaces. Therefore, all surfaces are typically "touched" twice with two different chemicals. The surface must be able to withstand those chemicals.

Note that soft surfaces, such as woven textile fabric upholstered furniture and <u>carpeting</u>, cannot be disinfected but can be sanitized to "reduce microorganisms of public health concern to levels considered safe, based on established parameters." The U.S. Environmental Protection Agency (EPA) has not yet recognized a chemical suitable for disinfecting upholstered furnishings. Such furnishings can be sanitized but not disinfected.

PROPER CLEANING PROCEDURES: THE LABEL IS THE LAW

The EPA regulates pesticides at the national level, which includes chemical disinfectants for hard surfaces that are manufactured with strict labeling requirements. The EPA-approved labeling will provide users with information including, but not limited to, surface compatibility, dwell times, appropriate application methods, kill claims, and safety information for proper handling.

Organisms Outside Human Body

Microbe	Survival time outside the human body
Clostridium defficile (spores)	5 months
Acinetobacter spp.	3 days to 5 months
Enterococcus spp. including VRE	5 days to 4 months
Pseudomonas aeruginosa	6 hours to 16 months
Klebsiella spp.	2 hours to > 30 months
Staphylococcus aureus, inc. MRSA	7 days to 7 months
Norovirus (and feline calicivirus)	8 hours to > 2 weeks ¹
SARS Coronavirus	72 hours to > 28 days ²
Influenza	Hour to several days ³

In order for disinfectants to be effective, strict adherence to the label is essential, but not necessarily abided to in the field. The chemical must be appropriate for the surface. The vast majority of disinfectants are typically formulated for use on hard non-porous surfaces and not intended for use on soft surfaces. When used, these chemicals can damage coated upholstery fabrics. While coated fabrics are considered non-porous, they are in fact soft surfaces.

Once the surface has been cleaned, a disinfectant is applied to the surface for the appropriate amount of time (i.e., dwell time) to kill the microorganisms which it claims to be effective against. The dwell time, defined as the amount of time a disinfectant must remain wet on a surface, is dependent on the specific chemical disinfectant and can vary between 30 seconds to 10 minutes as listed on the product label.

The amount of time the disinfectant is wet on the surface, in order to meet the dwell time, may impact the fabric. In addition, as cleaning professionals often have limited time to clean, these surfaces are often not kept wet for the required dwell time or rinsed off as required by the manufacturer's instructions, contributing to accelerated surface material degradation.

All disinfectants are not the same. There are a handful of different active ingredients utilized for disinfection purposes. These active ingredients react differently when it comes to material compatibility as certain disinfectants can be corrosive and cause visible damage, like tarnishing, clouding or cracking with long-term exposure affecting the material integrity.

Therefore, when selecting a disinfectant, it is crucial to choose a disinfectant less likely to degrade the surface to which it is applied. This can be determined through proper validation and testing. Testing associations have provided healthcare designers with testing information to inform durable coated fabric product selection, i.e. CFFA-Healthcare-201B.

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Infection Prevention Starts with Autonomous Cleaning

As healthcare facilities continue to work to overcome challenges associated with keeping facilities clean and safe for patients and staff, autonomous solutions play a significant role.

The labor market for both healthcare and cleaning professionals continues to face labor shortages. The <u>American Hospital Association</u> reports "America will face a shortage of up to 124,000 physicians by 2033 and will need to hire at least 200,000 nurses per year to meet increased demand and to replace retiring nurses." In addition, according to the <u>US Bureau of Labor Statistics</u> "About 335,500 openings for janitors and building cleaners are projected each year, on average" between 2021-2031. For property managers, this makes finding ways to support facility managers and thus EVS staff a top priority.

It can be tough to replace EVS staff quickly due to the extensive training required to fulfill job requirements compared to other cleaning professionals. EVS staff are taught skills necessary to deal with hazardous materials, stop the spread of HAI's and work to meet strict HCAHPS scores that can

determine whether a healthcare facility can stay open. In addition, it puts extreme pressure on healthcare providers who then must focus on cleaning as well as patient care. Without adhering to strict cleaning codes, a healthcare facility can put patients and staff in jeopardy and property managers left with empty buildings. This is where autonomous cleaning robots like Cobi 18, designed and manufactured by ICE Cobotics can help.

ICE Cobotics is a cleaning equipment and technology manufacturer specializing in autonomous cleaning equipment. Cobi 18 is a compact autonomous scrubber powered by advanced navigation software designed to clean effectively and consistently, resulting in cleaner environments and healthier people. Healthcare facilities can easily implement Cobi 18 to scrub floors, while also freeing available staff to focus on other high priority work essential to the safe operation of the facility.



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BENEFITS OF DEPLOYING AUTONOMOUS FLOOR SCRUBBERS LIKE COBI 18

Cleaner Floors: ATP (adenosine triphosphate) testing has shown that after running Cobi 18, the floor is 50-75% cleaner than when the floor is cleaned using traditional methods.



Consistent Clean: Because Cobi is so simple to operate, facilities can clean floors at least 50% more than normal. On average, businesses clean floors 1-2 times a day. With Cobi 18, they can run multiple routes throughout the day with the click of a button.

Efficient Clean: Cobi follows a consistent path and due to machine learning, becomes more efficient over time, resulting in more square feet cleaned in less time.



BENEFITS OF COBI 18 FOR PROPERTY MANAGERS

Innovation: Deploying Cobi 18 creates a positive perception of cleanliness in your facility. A visible sense of cleanliness helps patients and staff feel at ease and safe because they see the cleaning taking place.

Access to Data and Analytics: Cobi is equipped with i-SYNERGY, ICE Cobotics' fleet management software. The IoT technology tracks data and analytics through cloud-based technology, making it easy to access cleaning data across all locations managed.

Confirmed Clean: I-SYNERGY fleet management also allows users to track square footage cleaned, time and duration of cleaning, as well as machine operators, making it easy for property managers to confirm cleaning is done and to report the information to interested stakeholders.

Available Through an All-Inclusive Subscription: The all-inclusive subscription makes managing floor cleaning simple and the adoption of automation obtainable for all, as it starts at \$15 a day. With the all-inclusive subscription, users can avoid technology obsolescence and reduce downtime with the simplistic service package.

The subscription includes:

- Consumables
- Software Updates
- Service and Support
- i-Synergy Fleet Management

ICE Cobotics strives to impact building occupant health and safety by delivering cleaning technology designed to support the wellbeing of all. By deploying equipment that is smart and easy to use, property managers can support cleaner healthcare facilities.

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Redefining Healthcare Interior Design and Materials in a Post-Pandemic World

IIDA's annual Healthcare Design Awards reflects on spatial changes designers might see in a post-pandemic world, and how interiors can challenge the standards of how people provide and receive care.

By Irena Frumkin

How are interior designers and their teams addressing recent healthcare challenges? As COVID-19 developed into a global pandemic, designers, architects and manufacturers mobilized quickly and began re-imagining the ways we could improve materials and furnishings of current and future healthcare spaces. With an increased and critical focus on healing, safety, sterilization and capacity, healthcare environments are at the epicenter of a major design shift.

As our understanding of the pandemic changes and evolves, the design of healthcare interiors will evolve as well. While we cannot know for sure how healthcare interiors will look in five, 10 or 20 years, we know that design and architecture firms across the world are up for the challenge of matching design with need and necessity.

ADAPTABLE SPACES MEAN FLEXIBLE SOLUTIONS

In the coming years, "adaptability" will be an even more prominent keyword for healthcare design. The current crisis has made clear that certain health-



care environments may not be fully equipped to face unique and urgent challenges, knowing that the state of safety and healthcare needs in our society can change within a matter of days.

As we build new treatment facilities and hospitals, we will need to strongly consider how to make the designs easily adjustable. Flexible, multipurpose spaces and elements like shell rooms, mobile workstations and prefabricated walls will become the norm for creating adaptable solutions for space capacity and treatment types.

RETHINKING COMMON AREAS

Unnecessary common spaces within all public buildings and centers may be on the chopping block as we try to limit the time we spend around strangers. Self-check-in and self-rooming trends will continue to increase in healthcare facilities, and designers will need to accommodate the shifting norms for how we wait for care and for loved ones.

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Redefining Healthcare Interior Design and Materials in a Post-Pandemic World



Photo by: Halkin/Mason Photography, LLC; courtesy of EwingCole)

Staff rooms intended for rest and respite will also be reconsidered. Shared break rooms or staff locker rooms may be replaced with smaller, more spread-out spaces. Administrative officers may also move off-site with certain employees encouraged to work from home, especially at peak clinic hours. These adjustments will limit the number of people in a healthcare facility at any given time, and provide designers with more design flexibility.

INCREASING DIGITAL CAPACITY

Telemedicine is having a moment, and we will likely continue seeing our doctors virtually, even as the U.S. enters advanced stages of reopening. Telemedicine has already been a helpful tool in connecting patients living in rural areas or with limited capacity for travel with healthcare providers, and now it is allowing providers to perform routine checkups with patients without putting anyone at risk.

As telemedicine technology advances along with this increased demand, the physical design of healthcare spaces will need to evolve to accommodate a digitized world and help create space efficiency and limit non-emergency patient surges. Additionally, contact-free digital technology like digital kiosks that do not require administration will become standard, decreasing the need for face-to-face exposure.

IIDA HEALTHCARE DESIGN AWARDS

This annual competition celebrates outstanding originality and excellence in the design and furnishings of healthcare interior spaces, and will provide you and your firm an opportunity to share your innovative designs with the international design community.

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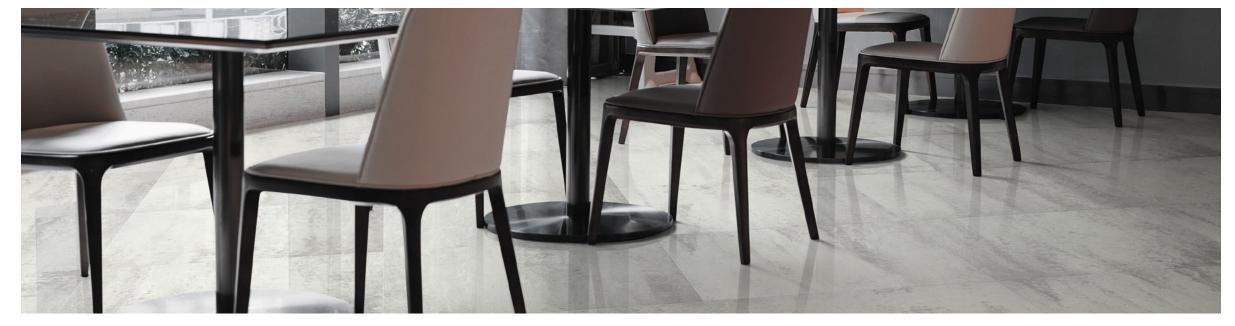
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The Complete Tile Solution

Porcelain | Gauged Porcelain Slabs Ceramic | Mosaics | Natural Stone Quartz | Custom Design

When it comes to tile there are many healthcare environments that can benefit from its use—both inside and out. Think about patient rooms, bathrooms, common areas like cafeterias, back-of-house kitchens, lobbies and entries, as well as exteriors.

Made with naturally occurring materials, glazed porcelain and ceramic tiles provide an environment that does not support the growth of microorganisms. Porcelain tiles are fired at very high temperatures during manufacturing which eliminates VOC's and contribute to better indoor air quality. Tile glazing is impervious to moisture and chemicals. The setting materials used during installation, including grout, offer an additional layer of alkaline and antimicrobial protection, when installed properly.





Because of the impervious nature of glazed and unglazed porcelain and ceramic tiles, cleaning is easy and inexpensive, too. There are a few rules to follow:

- Begin cleaning with a simple dry sweep, then clean with a PH-neutral floor cleaner.
- Expensive oil and wax-based cleaners are not needed or recommended as a film will build-up.
- Avoid harsh abrasive cleaning pads.



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THE WELLNESS FACTOR

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Biophilia paired with sustainability and wellness continue to be primary drivers for tile design, as the benefit of bringing nature into the space for stress relief and overall well-being is greatly recognized.

Expect to see tile patterns and colors that evoke nature inspired elements such as water and botanicals.

Timeless looks that mimic natural hardwood planks in modern finishes, along with high contrast marble effects that draw attention with dramatic colors and veining are popular design choices.

Greens, blues, and warm neutrals are popular choices for interiors since these shades represent the significance of biophilic design, wellness, and sustainability.

WARM NEUTRALS: NATURAL TREND ALERT

Neutral shades with warm undertones provide an earthy, inviting setting while laying the foundation for sustainable design. A warm neutral palette reflects simplicity while emphasizing the beauty of raw, natural elements with their restorative and grounding characteristics. Rich shades of sand, taupe, mushroom, and brown help to create a feeling of comfort, warmth, and stability all while connecting us to the earth. The calming factor of color and design, factors into choices for healthcare.

For more inspiration connect with **Emser** Tile. With over 75 branches and 4 distribution centers nationwide, Emser delivers solutions for your next project along with:

- Dedicated national and local account team
- Dedicated customer service team
- Material storage
- Long-term project management
- Staffed product specialists
- Sustainable operating standards





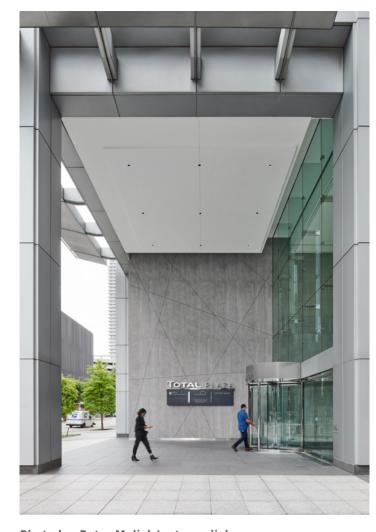


Photo by: Peter Molick/petermolick.com

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Material Health Requires a Look from All Angles

How do you know your furnishings are healthy? Learn how your team can start specifying healthy products with confidence.

By Jennie Morton

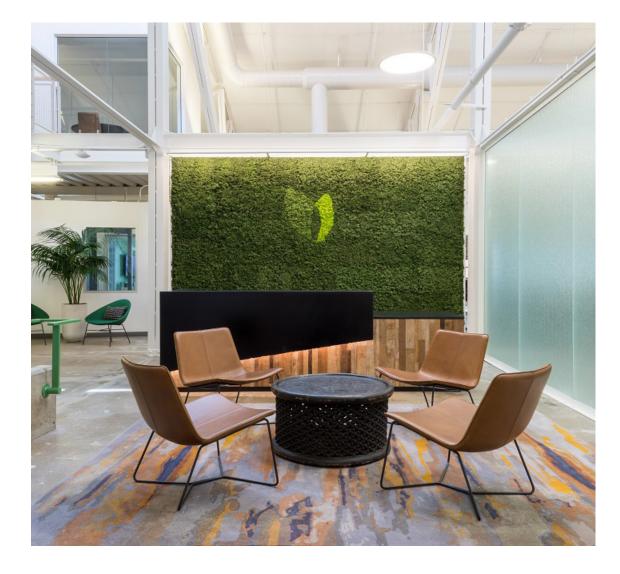
Picture a conference table in any style. Now ask yourself a simple question—how do I know if this furniture is healthy? If this mental exercise feels nebulous, you aren't alone. One of the ongoing challenges in interior design is to define what a healthy material is.

The leading perspective is that a product should minimize harm to the environment as well as occupants. Read on to learn how your team can start specifying healthy products with more confidence.

THE DESIGNER PERSPECTIVE

Material health is like a multiheaded Hydra—it's a collection of attributes that can be difficult to pin down. The market is full of product labels, some focused on single attributes while others combine multiple characteristics. Parsing out the most important traits can be a crash course in chemistry, environmental science, manufacturing processes and human biology. Then multiply that detective work across each item designated in a project.

"I did not study climate science as a design student," joked Ren Decherney, a trained interior designer and business development manager with the International Living Future Institute. "But it's now our job to weigh this complicated information. A multi-attribute label is a helpful tool because materials need to be socially just and ecologically responsible. You can't make tradeoffs—they both hold hands together."



"Be wary of single-attribute claims," cautioned Anne Karel, senior project manager with IA Interior Architects. "Take the example of an acoustic panel with recycled content. It's great to have post-consumer material taken out of the waste stream and upcycled. But then what if you learn there's a risk of that element lowering IAQ? A multi-attribute certification navigates the bigger picture of material health."

Part of the evaluation process is becoming familiar with a product's composition. For example, a task chair often contains multiple types of plastics, metals and fabrics. Each component can be vetted for its environmental and human health impacts.

"One place to start is looking at documentation from vendors," recommended Liz Dalton, an interior designer for the firm <u>Arcsine</u>. "They aren't always asked, so it may be a backseat in their materials. Those resources are there from manufacturers who have made transparency a priority."



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Tools like the <u>Declare</u> label are another avenue. It does much of the homework for a designer, looking at a product's life expectancy, embodied carbon, ingredient disclosure and end-of-life options. It also has additional compliance with the <u>Living Building Challenge</u>, which covers responsible sourcing and healthy interior performance. Similar programs include <u>Cradle to Cradle</u> and <u>BIFMA LEVEL</u>.

"My preference is to start with Living Future's <u>Red List</u>," Karel explained. "It identifies the top offenders of pervasive, persistent carcinogens—there's just nothing good about them."

"The Red List flags chemicals that bioaccumulate in the environment. Furthermore, these compounds are toxic throughout the supply chain, not only to end users but also workers involved in extraction, manufacturing and installation. It's a worst in class list," Decherney clarified.

THE CLIENT PERSPECTIVE

The role of healthy materials is also influenced by project goals. An organization's mission, customers, products, branding and even a founder's vision can all impact what type of materials will align with a space.

"Different clients have different objectives," said Karel. "Priorities that affect product selection can look like indoor air quality, recycled content, low VOC, LEED certification, embodied carbon, climate change, social equity and even their own version of a banned list."

Karel cited healthcare giant Kaiser Permanente as a leading example. Concerned about chemical exposure, the organization prohibits caustic materials such as chemical flame retardants, antimicrobial agents and fluorochemical treatments. Its PVC moratorium not only covers flooring but also wall protection, corner guards, table edging and signage.

The pandemic has also raised the bar on healthy materials to include cleanability and durability. Yet these attributes can create competing objectives, such as wanting the ability to disinfect or sanitize without material degradation. Clients may need guidance on how to balance environmental responsibility, social justice, wellness and product longevity. But in the end, every informed decision is a stride forward.

"I view healthy materials as following the same principles of universal design—making a product better for some people makes it better for all people. Why wouldn't you specify that option? Plus, there are so many more choices than there used to be," Dalton said.

"Every little thing a designer does has a huge impact," emphasized Decherney. "Start with one product on one project. Make the best decisions based on the information you have right now. The impact will be felt not only in your project, but across all the communities that contributed to its creation."



As a waste solutions organization, Brightmark needed a sustainable office that echoed its environmental focus. The process started by selecting a site located in a historic mill rather than building new. With the help of architecture firm Arcsine, the 14,000-square-foot space prioritizes elements that contribute to human and planet wellness, including:

- Living moss walls
- Porcelain manufactured with only water vapor as a byproduct
- Products made by B Corp companies
- Items with <u>Forest Stewardship Council</u> or <u>MAS Certified Green</u> certification (low emissions)
- Reclaimed wood
- Fabrics made from recycled ocean plastics
- Countertops made from 100% recycled paper and repurposed industrial resin

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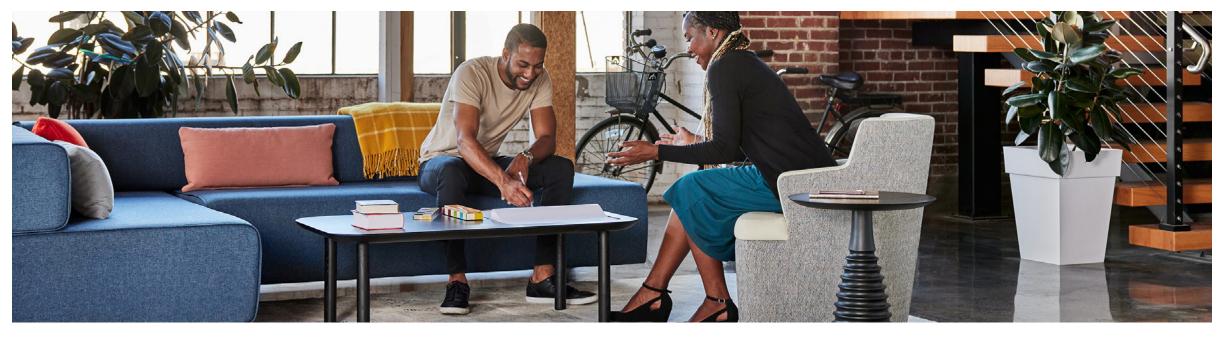
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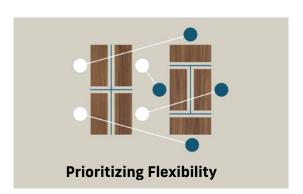




Give Employees Peace of Mind

Creating a place where employees feel comfortable and productive is more than providing a workspace. It's about connecting to a greater purpose and supporting individual needs. It's about creating a place to belong.

It is essential to create environments where each employee feels valued. From adaptable spaces designed to support a variety of activities to carefully curated nooks that focus on individual satisfaction, workplaces must accommodate employee needs and include elements that create a successful environment.



Collaboration and connection happen within the workplace, so users want choices of spaces that support a variety of activities.

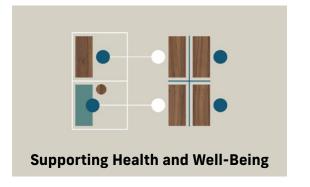
Balancing Hybrid Environments

Visualize the potential within spaces by thoughtfully designing environments that are able to shift and evolve to be responsive to future needs.

Kimball International collaborated with research specialists* to truly understand the authentic and real elements that drive employees. Through that research, they established four elements that need to be recognized and adopted to create places to belong:



Facilitate a sense of belonging by creating culturally compelling and engaging places that support all types of users throughout their purpose.



By placing physical and mental health as a top priority, create spaces that support overall wellness and mitigate burnout.



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Now, more than ever, there is a large emphasis on company values and how physical spaces represent a company's culture. Yes, safety protocols are important, but in addition to those tangible changes, employees crave for the workplace to be a place of community, connectivity, and shared purpose. In a time of unprecedented change, office culture, dynamics, and inclusivity are must-haves.

Organizations that flex to their employees' changing needs will have the advantage. They need to read how workers are settling in and adjusting to being back in the office. As we all develop new habits and ways of working, it's important for workplaces to be flexible and adaptable. Being able to shift, grow, and resize spaces will give employers the ultimate return by

providing employees with a choice in where to work during an average day. Having a choice in where to work is unequivocally associated with higher performance. That flexibility is the driver that boosts happiness and ultimately productivity.

By incorporating the right mix of furniture solutions and human-focused elements, it's easy to create spaces that are inviting, personal, and functional...creating a culture that people want to return to.

From basic needs (like workspaces and focus areas) to feeling like they are a part of their company's culture, Kimball International's Creating
Places to Belong playbook offers personal insights and facts-driven statistics so you can successfully create a thriving work environment.

66%

of employees missed socialization and collaboration with co-workers.

26%

of employees said they missed "being in the know" that's often found through water cooler interactions. 26%

of employees felt working remotely delayed their career growth by not being around leadership. 60%

of employees feel that collaborative group work should be face to face. 15%

of employees said their connection to the company culture has suffered.

^{*}Kuchar is a boutique interior design studio located in Chicago, IL that specializes in commercial, residential, and hospitality design.

^{**}DesignIntelligence is an independent and unbiased source of knowledge and insight for leaders across the design continuum.

^{***}Ipsos is a global leader in market research that delivers reliable information and a true understanding of society, markets, and people.

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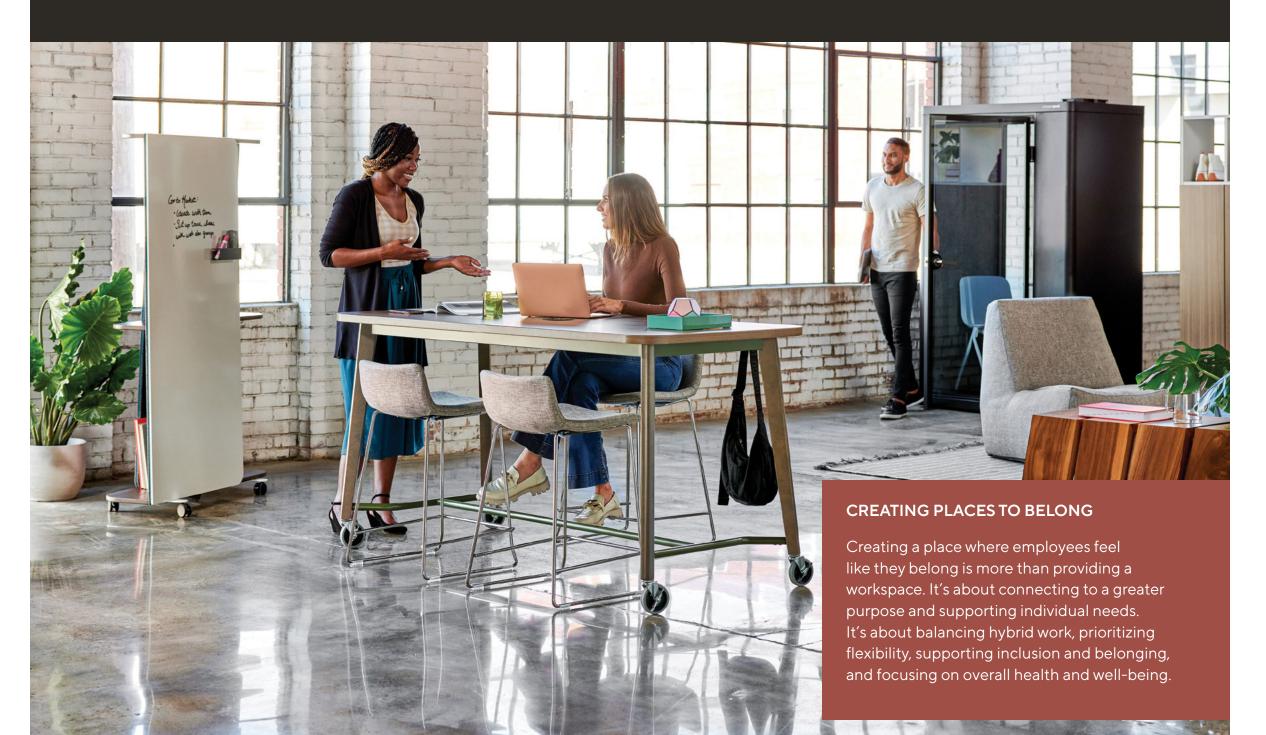


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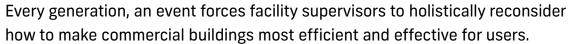
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Healthy Buildings Start with Touchless Tech

Anything you can do to make building occupants feel safe from health risks will increase morale and productivity. Touchless tech has an important role to play.

By Dave Milliken



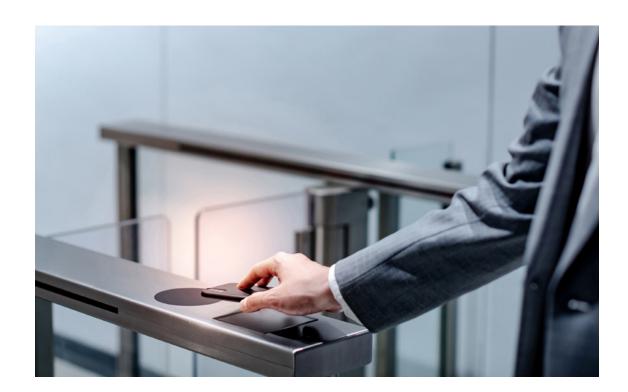
As a building operator, you may have implemented new security protocols; incorporated natural ventilation with mixed-mode heating, ventilating and air-conditioning (HVAC) systems; added creature comforts to accommodate changing demographics; lessened a building's carbon footprint (and operating costs); and reconsidered how people enter and exit your buildings.

And, of course, you have considered how smartphones and other emerging technologies evolve and impact how people experience your facility.

Ultimately, the goal is the same—maximizing each building's longevity and utility for tenants or users. Today, all those elements are converging. Making sure you operate healthy buildings is key to the visitor experience and employee productivity. While there are many factors, avoiding unnecessary contact with physical items is central to keeping people from getting ill, whether from COVID-19 or the flu.

WHAT ARE HEALTHY BUILDINGS?

A healthy building encompasses a wide range of concepts and applications focused on allowing occupants to operate at the highest possible level of functionality. A healthy building supports the physical, psychological, and social wellbeing of people in the building and its immediate environment. While



your building can be certified under the <u>WELL Building Standard</u> or <u>Fitwel</u>, this step is not necessary to take steps toward increasing inhabitant wellbeing.

Supporting physical health is important, as Americans spend <u>87% of their time indoors</u> where <u>pollutant levels are higher</u>. Designing for health takes into account comfort, natural light, low <u>background noise</u>, easy access to nutritious foods and healthy drinking water, exercise facilities, ergonomics, and effective ventilation. Ultimately, anything you can do to make employees feel safe from all risks will increase productivity, creativity and morale.

TOUCHLESS TECHNOLOGIES FURTHER ENHANCE BUILDING HEALTH

It is important for people to work together. It is proven to <u>foster collaboration</u> and <u>innovation</u>. To keep people healthy in a shared workspace, we need to set up systems that avoid unnecessary physical contact.

Enter touchless technology. While they are getting a lot of attention today, these tools are not new. Dating back to the early 1980s, the concept of touchless technology gained steam commercially thanks to RFID, while Sega's Graphics Board proved consumer interest. With traditional computing, people need to interact directly with a computer to control it, whether that is typing on a keyboard or tapping a touchscreen. Touchless simply means computers can recognize remote devices, gestures, audio or movement as commands.



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Consider your experiences checking into a flight. Twenty years ago, you would have needed to speak with a clerk at the counter. Then you checked yourself in via kiosk (and were annoyed if you needed to go to the desk). Then it evolved to checking in via web browser and today directly from your smartphone.

This is how workplace reception will evolve. By reducing the number of people in the reception area you reduce the risk of illness. No-touch visitor management systems will keep inhabitants of your building productive and guests happy too. These systems are already available and can send instant reception notifications by voice call, text message, email or instant message.

They can also capture health questions and log visits for contact tracing. This emerging technology ensures visitors are able to complete the entire check-in process from finding and selecting their host to entering required information about themselves, or from taking a photo to electronically signing legal documents. When the process is complete, hosts will be notified. All of this works exactly as if the visitor had used a kiosk or interacted with a front desk clerk.

Once inside the workplace, smartphone or biometric-based access control might allow doors to open automatically for employees and visitors authorized to enter an area. Gesture controls and voice recognition will allow people to set up a conference room without touching shared surfaces. And touchless payment systems like Apple Pay or Amazon Go Grocery stores can allow everyone to complete financial transactions. Meanwhile, motion detection and robot security guards will monitor the premise, while drones survey the exterior.

Keeping inhabitants healthy is perhaps the biggest factor in promoting productivity. Combining the healthy building concept with available touchless technologies will get people working together without spreading germs. This will create a safe environment and further peace of mind.

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How to Make your Building Healthier, More Attractive, and Sustainable and How Room Air Purifiers Can Help

Airborne virus transmission could have been a fatal blow to the commercial property industry. Would anyone want to work in a communal office again? And the concern widened: pre-COVID, few were aware of the damaging effects of ultrafine particles, and nowadays we're all PM2.5 aficionados, concerned by contaminants indoors—from CO2, VOCs, mold, and pathogens to outdoor pollutants including wildfire smoke and dust.

While we have learned how to provide safer building air quality, not all the adaptations are effective (some HVAC systems can't be upgraded), and many bring negative consequences. To solve these problems, recent industry indoor air quality guidelines reduce the importance of ventilation (which requires conditioning and may introduce new contaminants), shifting to a layered approach pairing HVAC systems with in-room technologies, including in-room air purifiers.

We asked Agentis Air president Larry Rothenberg to answer frequent questions he hears about these new guidelines and how to use room air purifiers as part of the solution.

CAN'T WE JUST USE A BETTER HVAC FILTER?

During COVID, operators relied on increasing both the MERV rating of filters and the amount of fresh air introduced. The problem is that both have an energy penalty. The energy expense required to power high-MERV-rated filters and to condition the air also detracts from sustainability targets. The new approach, driven by recent amendments to ASHRAE Standard 62.1, involves balancing indoor air quality improvement and sustainability by controlling MERV ratings, adjusting the fresh air introduced, and using other technologies including room air purifiers.





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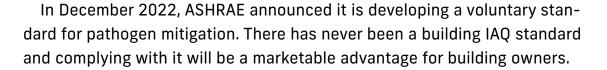
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IT'S NOT JUST COVID. TENANTS WORRY ABOUT BREATHING HEALTHY AIR. CAN A ROOM AIR PURIFIER HELP?

There are three basic IAQ threats: pathogens, particulate matter, and gasses. **Pathogens** (such as COVID-19) usually come from infectious people releasing viral particles into the air. **Particulate matter** can come from wildfires and other types of combustion as well as asbestos, dust, dust mites, mold, and pollen. **Gasses** include CO2, carbon monoxide, and formaldehyde. For pathogens and particles, select an in-room air purifier that is effective in removing ultrafine particulate matter. In addition to reducing the spread of airborne viruses including Covid-19, this type of air purifier also removes other damaging particles. Placing the air purifier near the pathogen or particulate source (either human or environmental) can rapidly improve effectiveness over HVAC systems alone. Consider adding in-room air purifiers to high traffic locations such as reception areas, waiting rooms, cafeterias, and meeting and conference rooms.

ARE THERE STANDARDS TO USE WHEN CHOOSING A ROOM AIR PURIFIER?

Yes, absolutely. For safety, make sure the air purifier is **UL listed** and certified as ozone-safe (under 50 parts per billion) by the **California Air Resources Board** (CARB). To conserve energy, look for **Energy Star** certification.

Every air purifier will have a published Clean Air Delivery Rate (CADR). Use the CADR to select an air purifier that is right sized for the space.

It is important to choose an air purifier that removes ultrafine particles and that will remain at peak performance between filter changes. HEPA room air purifiers physically block and trap particles so the filter clogs, and performance drops off. Electrostatic APART™ technology, in our Brio™ air purifiers, offers a different approach. APART technology removes all particles, including the most dangerous ultrafine pathogens, without filter clogging, so clean air can flow freely. Due to clogging, HEPA air purifiers may need filter changes every two to three months. Under the same conditions, Brio's particle collection cartridge can last a year or longer before replacement. Less frequent filter changes can mean considerable savings and less maintenance year after year.

In-room air purifiers with advanced technology, like Brio, offer a rapid, adaptable solution for building owners to lower costs and improve indoor air quality. Placing Brio air purifiers in key spaces can bridge the HVAC clean air gap, reduce energy use, and lower maintenance costs. And best of all, indoor air quality improvement can begin immediately.

ABOUT AGENTIS AIR

Established in 2019, Agentis Air is a collaboration of research scientists, engineers, and air quality experts on a mission to improve human health and longevity through better indoor air purification technology. With decades of university research and development experience, our company is focused on transformational air purification technologies with broad applications for institutional, commercial, and consumer markets.

Find out more about Brio and Agentis Air:

agentisair.com/?utm_source=buildings-ebook



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JUMP START HEALTHY

INDOOR AIR WITH BRIO

Quickly close the HVAC clean-air gap in tenant spaces with Brio's patented, in-room air purification technology



Removes Viruses



Traps Pollutants

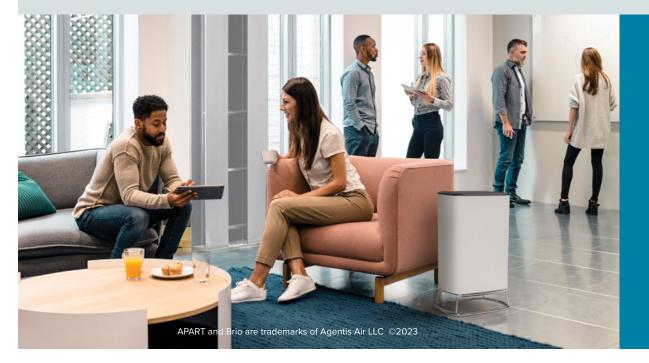


Always Effective



Lowers HVAC costs





A RAPID, ADAPTABLE RESPONSE

With Brio[™], improvement can happen immediately as a first step or a long-term solution. Find out how Brio can deliver better indoor air and reduce energy costs.





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A Prescription of Acoustic Flooring for Patients, Staff at Methodist Mansfield

Renovated medical center's NICU experiences the unexpected quiet of vinyl Rx surfacing.

By Mindy Zissman

LOCATION: Mansfield, Texas

DESIGN TEAM: Whitney Hendrickson, Perkins&Will

CHALLENGE

The center in Mansfield, Texas, began the \$8.7 million expansion of its existing Neonatal Intensive Care Unit (NICU) in 2018. The hospital, which offers full-service maternity care, added eight private rooms, family amenities, a state-of-the-art infant security system, and dedicated respiratory and lactation support spaces. They needed a flooring fit for the job.

INFLUENCE

Interior designer Whitney Hendrickson had unique insight into what the space demanded. Prior to becoming a certified interior designer, Hendrickson was a pediatric nurse.

When it came time to select the flooring, Hendrickson recalled a 2017 tour of a Philadelphia hospital where Ecore's Rx Collection was installed. "It was so eerie because it was unexpectedly quiet," said Hendrickson. "My eyes and ears did not match up. I thought they must not have had many patients, but they did! I could see staff moving around and carts being pushed down the corridors, but I didn't hear what I normally hear in an ICU. It didn't feel 'clinical' at all—in a good way!"



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SOLUTION

Hendrickson worked with Thais Pimentel, LEED AP ID+C and Interior Designer II with Perkins&Will, to specify Ecore's Strait Rx and Infinity Rx flooring for the Methodist Mansfield NICU. Both engineered surfaces from the Rx Collection feature its patented TRU technology, where vinyl is fusion bonded to a vulcanized composition rubber backing. The result is two bonded surfaces that, in addition to significantly reducing surface-generated noise, provide a force reduction of 11.5% and energy restitution of 72%—a major benefit for healthcare environments where staff spend the majority of their shifts on their feet. The enhanced ergonomic performance also reduces the force of impact related to falls.

The Ecore solution was specified in a subtle curved pattern to assist with wayfinding and to help delineate staff and family areas. Additionally, the inclusion of the recycled rubber improves the environmental footprint of the floor. Ecore uses reclaimed truck tires in its products, and the material is technically upcycled, which means it is turned into a higher value product that has a much greater lifespan. The flooring used for the Methodist Mansfield project diverted 5,897 pounds of tire rubber from the landfill, equivalent to about 59 tires.

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MADISON CHAIR

Samuelson Furniture's Madison Chair is handcrafted and defined by its distinctive shape—a wooden base and tapered, splayed legs. Ideal for healthcare spaces, the Madison Chair comes with two options. One is the discreet TILT system, which allows the seat to tilt forward, exposing a drop-through frame that makes the chair easy to clean. The chair also comes with another upgrade option—a patent-pending hardware system called CATCH by Samuelson that suspends a folded walker on the back of the chair. Both add-on features increase the chair's resiliency and flexibility for healthcare facilities. MADISON CHAIR by SAMUELSON FURNITURE. www.samuelsonfurniture.com



DESIGNBASE-SL

Durable baseboards for commercial buildings provide a modern alternative for healthcare, commercial kitchens and bathrooms, airports and more. Now including a brushed stainless-steel option, with higher heights of 4.375-in. and 6.375-in., the baseboards can cover previous baseboard marks, making replacement projects faster, easier and more attractive. DESIGNBASE-SL is designed to be installed after the floor and is suitable for use over any type of flooring surface. DESIGNBASE-SL by SCHLUTER SYSTEMS.

www.schluter.com/schluter-us/en_US



NATURAL SELECTION PLUS

HFLOR by LX Hausys America Inc. recently introduced the Natural Selection Plus Heterogeneous Sheet Collection, a versatile flooring solution that meets the design, durability, hygienic and maintenance needs for healthcare environments of all types. The Natural Selection Plus Collection features LX Hausys' unique anti-fungal and anti-bacterial technology that prevents bacteria and mold from penetrating the surface, thereby mitigating the spread of healthcare-associated infections. An enhanced surface treatment technology, tested to protect against micro-scratches and stains, maintains the look of the colors and patterns over time. The products can be cleaned and cared for using standard facility equipment to help reduce maintenance expenses. The ability to perform against heavy 24/7 usage, including foot traffic, wheelchairs, medical carts, patient beds and other equipment, is met through a 28 mil (0.7 mm) thick wear layer, guaranteeing outstanding durability. NATURAL SELECTION PLUS by HFLOR. www.lxhausys.com/us/index



OPEN RANGE

Mannington Commercial's Open Range collection is a family of hard-working rubber plank flooring ideal for healthcare, education, office, retail and other commercial interiors. Delivers enhanced performance, comfort, safety and acoustics thanks to the rubber composition. Comes in a 6.25-inch by 42-inch plank format and is available in 12 warm and neutral tones that easily coordinate with Mannington Commercial's other carpet and resilient flooring lines. Never needs waxing due to a proprietary combination of waxes manufactured into the rubber itself. Contains 4% rapidly renewable resource content by total product weight and is FloorScore Certified, as well as EPD- and HPD-certified and Red List Free. OPEN RANGE by MANNINGTON COMMERCIAL.

www.manningtoncommercial.com



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ABOUND HEALTHY AIR STARTER PACKAGE

Carrier's Abound Healthy Air Starter Package helps facility professionals understand the health of their indoor spaces. Provides a simple, quick and cost-effective way to monitor, visualize and react to the unseen components of indoor air quality, supporting occupant wellness. Installs in half a day and provides real-time monitoring of up to three different spaces covering roughly 30,000 square feet. Ideal for lobbies, small conference rooms, entrance areas and open offices in any type of building and can be scaled to portfolios of any size. Includes wireless, battery-operated IAQ sensors that measure carbon dioxide, particulate matter, VOCs, radon, temperature and humidity and connect to the cloud through cellular hubs that pull the IAQ data into the Abound interface. ABOUND HEALTHY AIR STARTER PACKAGE by CARRIER. www.corporate.carrier.com



CAPRI TABLE COLLECTION

Capri tables are ideal for today's modern healthcare environments. Available in 24 sizes, the laminate tables can be customized with or without a plinth base. The drum tables not only last, but provide a welcoming aesthetic for healthcare. Color selections include four new laminate colorways recently introduced by Stance Healthcare: Aria, Palomino, Dolce Vita and White Chocolate. The tech-forward offering features electrical units as an optional add-on. CAPRI TABLE COLLECTION by STANCE HEALTHCARE.

www.stancehealthcare.com



MATURE ADVANTAGE

Mature AdVantage is an anti-viral and anti-microbial flooring solution for healthcare, assisted living, education and any other application that requires extra protection without sacrificing visual beauty. Reduces the number of specific viruses on the product by 99% or more within 24 hours. The anti-viral properties are built into the ClearGuard wear layer and will perform as long as the wear layer remains intact. The low-profile texture and ClearGuard technology combine to stand up to high-traffic environments for decades without waxing or polishing. The mechanically embossed backing provides superior bonding to the subfloor. Available in 35 wood, stone and textile visuals with coordinating weld threads. MATURE ADVANTAGE by CBC FLOORING. cbcflooring.com



GATHER

Introducing a dramatically enhanced product category for Wolf-Gordon, GATHER™ Acoustical Materials adds an ingenious set of acoustic solutions to the Company's portfolio. As the dynamics and goals of open spaces in commercial interiors evolve post-pandemic, GATHER Acoustical Materials inject beautiful, color-saturated pattern design while helping to reduce noise, whether in workplace, education, hospitality or healthcare interiors. Formatted in a panel construction, GATHER is offered as a kit of parts for designers to customize. Twelve colorways in 4' x 9' panels that are 1/4" thick can be used alone or cut and combined in color block compositions. GATHER™ can also be digitally printed, V-groove engraved, laser cut and folded into over twenty different high performing dimensional patterns. GATHER can also be layered to reveal contrasting color while enhancing NRC ratings. GATHER by WOLF-GORDON.

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A COMPREHENSIVE GUIDE TO INDOOR AIR QUALITY

Indoor air quality has always been of vital importance, but never has it demanded more attention from architects, designers, building owners and facility managers than it does today in the wake of a global pandemic. This eHandbook offers the most up-to-date information available on the subject.

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Tile is an ancient building material that has passed the test of time and is as durable and practical as it is beautiful. New technologies and designs have helped this humble product evolve into one of the most versatile and sustainable products on the market. Find the latest information in this eHandbook.

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Variable refrigerant flow (VRF) zoning systems solve many of the challenges associated with commercial construction and facility management. It's time to ask yourself: is VRF right for my facility? This eHandbook explores that question.

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THE IMPORTANCE OF ACOUSTICS IN THE BUILT ENVIRONMENT

Every design choice impacts acoustic quality, and noise levels in a room can impact health, concentration and productivity—just ask anyone who's worked in an open office before. This eHandbook will help you better understand the fundamentals of how acoustics work in buildings, identify ways to improve acoustics and make the connection between acoustics and wellness clearer.

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REOPENING AND REIMAGINING EDU-CATIONAL FACILITIES AMID COVID-19

In this eHandbook, we've compiled a number of up-to-date guidelines and resources from some of the most trusted sources to help get educational facilities ready for learning.

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As more in-person business is taking place and life is returning to "normal." It's time for us to ask ourselves: what did we learn from the past year and a half, and how did COVID affect the way we do things in our buildings? This eHandbook attempts to answer those questions and more.

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REDEFINED & REDESIGNED: HOSPITALITY SPACES IN THE COVID ERA

In this eHandbook, we look at the evolution of hotels into streamlined, touchless experiences with stringent cleaning practices. We also explore how meeting and event spaces have changed during the pandemic, repurposing guest rooms as temporary office space, and the "staycation" trend that may be here to stay.

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While we understand more about COVID-19 today than at the outset of the pandemic, it will continue to reshape the way medical facilities are designed and operated. We assembled this eHandbook: to offer guidance from trusted sources to help hospital staff and design professionals alike with the decisions they need to make today—and tomorrow.

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In this eBook, we've assembled a preview of numerous guidelines and white papers with practical information on getting your workplace ready for reopening from some of the most respected organizations and architectural firms, including direct links to download the complete reports.

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